ASSESSING THE POSSIBILITY OF ADOPTING BLOCKCHAIN TECHNOLOGY IN ACHIEVING UNITED NATIONS SUSTAINABLE DEVELOPMENT GOAL 2 IN IDP CAMPS IN NIGERIA

Research dissertation presented in partial fulfilment of the requirements for the degree of

MSc in International Procurement and Supply Chain Management

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28th August 2020

Candidate Declaration

Candidate Name: Jessica Biebelemoye Olotu

I certify that the dissertation entitled: **Assessing the Possibility of Adopting Blockchain Technology In Achieving United Nations Sustainable Development Goal 2 In IDP Camps In Nigeria** submitted for the degree of: **MSc in International Procurement and Supply Chain Management** is the result of my own work and that where reference is made to the work of others, due acknowledgment is given.

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Dedication

This work is dedicated to God

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I want to thank my mum, Fortuna Utomi, for her support, prayers and encouragement throughout the duration of my program. I am immensely grateful.

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Abstract

This research is focused on assessing the possibility of adopting blockchain technology in trying to achieve the United Nations Sustainable Development Goal 2 (SDG 2) in IDP camps in Abuja, Nigeria. The research objectives are to ascertain the current system used to manage IDP camps in Nigeria, Review the status of the UN SDG 2 at the IDP camps and explore blockchain technology for adoption in IDP management. A survey was conducted using questionnaires and interviews were conducted as well to gain insight into the research questions from more than one perspective. A total of 100 respondents was gotten from using the questionnaire and a total of seven respondents were interviewed across five IDP camps in Abuja, Nigeria. The study shows that there is complete lack of support from the government and that there a lack of food supply to the camps and also based on the responses gotten from the interviews, the IDP camp environment is suitable for blockchain adoption.The study also discussed some limitations in the study as it would be remarkable if further study could be done on a larger sample size.

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1 Introduction

1.1 Overview

In recent years, there has been a steady escalation in global population mobility with an estimated 214 million people involved in international movement and forced displacement. Intractable issues such as wars, violence, political upheaval, religious persecution, economic instability and socio-political crisis have uprooted a good number of people in recent years. More than 2.9 million people were forced from their homes between 2016 and 2018 (IOM, 2017). The result of this massive movement is a global refuge crisis which has steadily degenerated over the years. According to the United Nations Refugee Agency (UNHCR) there were about 71.4million refugees worldwide in 2017 compared to 2.1 million in 2015 (UNHCR, 2018). The refugee crisis is now a major concern for local and foreign governments, non-profit organisations from humanitarian, economic and political perspectives.

Recent technological innovations are changing the operational activities on many levels in terms of governance in the public sector and even businesses in the private sector. Blockchain is an idea based on the management and storage of data through a network of various levels of an operational and dynamic system rather than by a centralised static activity. Blockchain was developed by (Nakamoto, 2009) as a register for bitcoin transactions. It has since been examined and evaluated in various areas of application including support for supply chain management (Korpela, Hallikas and Dahlberg, 2017), security and privcacy.in the context of the internet of things (iOT) and energy trading (Dorri et al., 2017).

In 2016, a report published by the Digital Humanitarian Network showed that blockchain could play a significant role in humanitarian response to crisis by providing cost effective ways of tracking the flow of information in an effective time saving manner across the service platforms used by the humanitarian organisations. Blockchain powered applications such as smart contracts, are being used for information management, identification, supply chain tracking, cash programming and humanitarian financing. Finland, for example is using MONI, a blockchain platform to help refugees without identification to circumvent the need for a bank account as it serves as a bank account. MONI enables the users pay their bills and take care of other financial problems. (Alden, 2018)

In crisis situations, Bitnation, a blockchain Emergency Identification System was developed to help family members verify family ties where family members have lost contact with each

other. Other related programs built to facilitate the deployment of humanitarian services include the World Food Program (WFP) which spearheaded Ethereum, a blockchain based application, which is being used provide food aid to refugees and others in need (Alden, 2018). Giveth, a donation application built using blockchain technology is being used to eliminate the bureaucratic hurdles that impede donations of funds towards humanitarian causes while ensuring a high level of transparency and accountability. On the whole, the use of blockchain technology in platforms such as Giveth, would significantly improve the overall cost and time required to transfer funds from donors to the people who need it (Laurence, 2017).

According to the United Nations office of the Coordination of Humanitarian Affairs ('HNO Nigeria - 15March2015.pdf', no date), several events have led to the proliferation of camps for Internally Displaced People (IDPs) across almost all the 36 states of Nigerian including the Federal Capital Territory (FCT). These crises include the insurgency in the North east of Nigerian consisting of Adamawa, Borno, Yobe, Bauchi, Gombe and Taraba states, the invasion of communities and small towns by armed Fulani herdsmen across the North Central, South East, South -South and South West parts of Nigeria, and the activities of armed bandits in the North West covering Sokoto, Zamfara, Kebbi, Kaduna and Katsina states. Natural disasters such as annual flooding has also led to a relatively large number of displacements. In 2019, 176,000 people were displaced from their homes as a result of natural disasters (OCHA, 2018).

According to the Internal Displacement Monitoring Centre (IDMC), the total number of internally displaced persons in Nigeria is estimated to be 2,583,000. Many of these people are vulnerable (elderly, women and children under the age of 5 and sick). The emergence of so many camps across Nigeria is a major impediment towards the efforts at achieving the SDGs by the various levels of government across Nigeria. For this study, the focus is on making a case for the application of blockchain technology in supporting efforts aimed at achieving the SDGs in the hundreds of IDP camps in Nigeria. Specifically, the study would focus on the United Nations Sustainable Development Goal 2. This goal aims to end hunger, achieve food security and promote sustainable agriculture. Cases of improper logistical handling of relief materials and palliatives meant for internally displaced people have been reported at different times in Nigeria (Eweka & Olusegun, 2016). The problem is two-fold. The first problem is corruption which is accentuated due to the fact that there is no system in place to easily track the number of IDPs and items meant for their use. The second problem is that the misapplication of the resources available that are of little or no value to the IDPs.

1.1 Research Purpose

The purpose of this study is to find out if IDP camps in Nigeria are suitable for the adoption of blockchain technology to achieve the UN SDG 2 in the camps.

1.2 Significance of the Study

It is long overdue for technological advancements to lend themselves to humanitarian crisis, as they have to global economies. To this effect, blockchain is to be explored as an avenue to relieve some strain from the present humanitarian crisis faced by IDPs in Nigeria. A (UNICEF, 2015) report says a large number of the IDPs in Nigerian camps are children under the age of five. The report also states that 1.4 million children have been displaced in Nigerian and neighbouring countries since the insurgency of Boko Haram began. Inadequate food and supplements supply to these camps have resulted in the children being severely malnourished. And according to the Medicins Sans Frontieres (MSF), six children die every day in the camps at Bama, Borno state as a result of malnutrition (MSF, 2016b). In June 2016, 188 people died in the camp at Bama, Borno state due to diarrhoea and malnutrition. 450 IDPs died in the 28 camps in Nigeria in 2015. Out of this number ninety-eight were children (MSF, 2016a). There have also being reports of misappropriation of funds meant for IDPs by public official. According to the government, a lot of money is being spent to cater for the needs of the IDPs. However, the plight of the IDPs have not changed because there is no accountability or transparency in the distribution of food or money to the IDPs. Where current solutions are failing. This study hopes to use previous blockchain use – cases and primary research to shed light on an alternative solution for sustainably procuring key resources the needed by the IDPs. In so doing, this study could be used to support further research that could reduce waste of lives in IDP camps, waste of finances and food due to mismanagement. To help tackle this problem, the adoption of platforms and systems built on blockchain technology for managing key aspects of the governance in the affairs of the IDPs across Nigeria becomes necessary.

1.3 Research Objective

The central aim of this study is to explore the possibilities for adoption for the management and tracking platforms built using blockchain technology for use at IDP camps across Nigeria in order to ensure that SDG 2 is achieved. This aim will be met through a number of objectives which include

- Ascertain the current system used in managing IDP camps in Nigeria including technologies adopted, if any.
- Review the status of SDG 2 at the IDP camps to identify gaps requiring intervention

Explore blockchain technology for adoption in managing IDPs and achieving UN Sustainable Development Goal 2 in IDP camps in Nigeria.

1.4 Structure of the Study

There are five chapters in this dissertation. Each chapter is dedicated to a specific aspect of the process employed to fulfil the research objective in order to answer the research question. This first chapter is the introduction to the dissertation. It introduces the topic and summary of the processes. The second chapter is the literature review, which acknowledged the existing theories, relationships and gaps in this area. The third chapter is the Methodology and research design chapter. This chapter explained the motivation for choosing the paradigm, approach and design adopted for this investigation. This chapter explains the method adopted for the collection and analysis of primary data and the related processes. The fourth chapter presents the findings of the analysis of the data collected. The findings in this chapter informed my recommendations in the next chapter. The last chapter explains the discussion and conclusions on the research. It explains the implication of the findings to the research question, the recommendations and the limitations of the research.

2 Literature Review

2.1 Overview

In the following chapter you will read about the way blockchain works in the first section and the key features of the technology. In the second section explains the use of blockchain in sustainable procurement. Supply chains and food distribution. The next chapter tells you about Internally Displaced Persons (IDPs), the key humanitarian challenges they face and displacement drivers. Following that is a section that introduces you to the welfare agencies in charge of IDPs. And finally, the last section explains how blockchain can be used to achieve the United Nations Sustainable Development Goals, technology adoption and the Unified Theory of acceptance and Use of Technology (UTAUT) and the conceptual framework adopted by the researcher to drive this investigation.

Contracts, transactions and records of the transactions are among the structures that are used to define economic, legal and political systems of the world. These structures help us protect our assets and set up boundaries and guidelines for organisations to follow. They are used to establish and verify the identities of the parties involved and to keep a record of all transactions. These structures determine how nations, organisations, communities and individuals to interact properly in the various systems and also guide the actions of management. All these structures are sometimes insufficient in keeping up with digital transformations of the economy, the environment and the society. Blockchain can be used to help organisations keep up with these transformations (Iansiti and Lakhani, 2017).

According to (Laurence, 2017) Blockchain is a data structure that creates a digital ledger that contains information concerning transactions on a network and shares this info with all parties on the network. (Drescher, 2017) describes blockchain as a part of the implementation layer of a distributed system.

Blockchain is also described as a distributed ledger that consists of a chain of immutable blocks containing encrypted data transactions. Transactions are carried out over a peer-to-peer distribution network and the transactions are visible to all participants on the network (Abeyratne and Monfared, 2016) A blockchain is formed by adding fixed blocks from new transactions to the network. Each block is linked to the previous block to ensure easy tracing of any transaction on the chain (Makridakis and Christodoulou, 2019). Blockchain has no central authority that manages the flow of data. The network is made up of independent users. The systems on the network are in different physical locations. These systems are called nodes (Laurence, 2017).

Information stored in blockchain is not centralised like in normal databases (Hartley, 2018). Blockchain technology depends on its decentralised peer-to-peer network which is designed to improve efficiency and transparency (Schneider et al; 2016) To prevent corruption on the network, blockchain uses cryptocurrency, a digital token with a market value that can be traded like stock on exchanges and cryptocurrency works differently for each chain. This is done using a software called blockchain protocol. This software pays the hardware to perform operations. The hardware contains the nodes that secure the data on the network. Examples of these protocols include Bitcoin, Ripple, Ethereum and Fatcom (Laurence, 2017)

Decentralisation, an important aspect of this technology, enables users to check transactions for errors in the information presented to them. A centralised database on the other hand is prone to hacking and corruption. (Nofer et al., 2017).

Blockchain solutions can be designed differently. They can be public permission less or private permissioned ledgers and networks (Ølnes, Ubacht and Janssen, 2017).There is no anonymity in private blockchain. All parties know each other. However, in a public blockchain, to maintain trust with an unknown user, cryptographic methods are used to allow a user access to the network and also record their transactions (Pilkington,2015)

2.2 Key Features of Blockchain

Blockchain is a decentralised technology. This means that it does not have any governing authority or a single person looking after the framework. No one person is given the authority to decide what goes on the blocks alone. The nodes on the network maintain the framework (Bagri, 2018). Transactions or records of transactions on the network is immutable. They cannot be changed by anyone for personal gain because of the decentralised nature of the network. An extra layer of protection is added by using encryptions for every transaction. This feature makes it easy for users to trust each other and the information shared on the network (Reiff, 2020). All users on the network have access to the ledger so power is distributed among all members instead of just one single person or a certain group of people being in charge (Anwar, 2018).

Every user on the network has a copy of the digital ledger. When a transaction is about to be added, all users need to check the transfer and ensure that it is a valid transaction. A transaction is only added to the chain when it has been confirmed as a valid transaction by a majority of the users. This feature helps to curb corrupt practices on the network (Hyugen Hai yen, 2020). Consensus is the backbone of blockchain technology. Transactions on a

block can only be carried out if all users on the network approve of the transactions. This is to ensure that the correct records are delivered to the users after the transactions are carried out (Thompson, 2018).

Blockchain is a chain of chains. Each chain is able to store information concerning a transaction and link it back to the previous block on the same transaction. This means the blocks are connected in chronological order giving them a trail that is easy to trace if need be. All blocks on the network are cryptographically sealed. This makes it very difficult for anyone to delete or modify blocks that have already been created. Blocks cannot also be copied and added to the chain without proper authorisation ensuring a high level of trust in a trust less system

Using these features blockchain technology presents us with a transactional application that establishes trust, transparency and accountability.

2.3 Blockchain in Sustainable Procurement

Recently, scholars and business managers have been more interested in the ways in which organizations and their suppliers can positively impact the environment, the society as well as the economy (Wendy, P and Walker, H, 2006). Relatively, the desire for organizations to increase its efficiency, ensure waste reduction, reduce supply chain risk and maintain competitive advantage have geared organizations to begin to consider environmental related issues (Humphreys, Wong and Chan, 2003). Sustainable procurement is built on traditional practices but includes sustainable principles

Procurement can be defined as the acquisition of goods and services from suppliers. Procurement involves sourcing, contracting, monitoring and evaluation. Sustainable procurement, however, is the process of acquiring goods and services from a supplier that provides optimum combination of whole life cost as well as provide benefits to meet customers' requirements. organisations set out to meet their demands for goods and services and other aspects of their business in a way that adds financial value and generate other benefits to the organisation, the society and the economy while ensuring that negative impact is minimized (Kalubanga, 2012a). Sustainable procurement taking into cognizance, the economy, the society and the environment when we buy our goods and services (Kalubanga, 2012b).

When managing a supply chain, sustainability is the triple bottom concepts that balances environmental social and economic perspectives. An important strategy for sustainability in a supply chain is the confirmation and certification of the process, products and activities

within the supply chain and meet the sustainability criteria and certification (Grimm, Hofstetter and Sarkis, 2014). Procurement takes up more than 70% of the total cost of products and systems (Presutti, 2003). A world bank report said the huge budget allocated for procurement is meant to manage supply functions such as buying of raw materials and finished goods and services. Buyers in the procurement system have to handle large amounts of an organisation's revenue while dealing directly with the suppliers. This makes it possible to gain undue advantage as funds can be diverted for personal gains. Fraudulent practices have become a major problem in organisations and have become the second most reported economic crime (Kamali, 2019). A study conducted in South Africa reveals that high level of corruption was identified in the public procurement sector (Symon, 2000). Buyers have been known to submit padded invoices for labour and materials, bribes in robs and prompt payments.

According to reports by Deloitte (2004), organisations in the middle east also suffer from fraud related in their procurement processes. A comprehensive study of fraud conducted by the Association of Certified Fraud Examiner (ACFE) in 2014 confirms that the procurement department is categorized as the department with the highest risk of fraud related schemes. About 25% of the fraud cases in the United Kingdom are procurement frauds. A study by PWC (2014) confirms that about 29% of fraud cases in the United Kingdom are procurement frauds. Organisations have tried several methods to put a stop to procurement fraud over the years by implementing control systems to mitigate its occurrence, still cases of fraud are being reported and this affects some businesses adversely.

A solution to these problems lies in improving transparency security and integrity of supply chain or procurement. The answer to this complicated problem is the blockchain technology. Blockchain is a disruptive technology that can be used to design, organise and manage a supply chain. This technology has the ability to guarantee reliability, traceability and authenticity of information. Tracking environmental and social conditions that may pose environmental and health concerns is an important area in which blockchain application are focused (Adams, Kewell and Parry, 2018). Practical examples include the Carbon Asset market in China is powered by blockchain. The Carbon Asset market allows businesses to generate carbon asset more effectively in accordance with China's Carbon Emission Reduction in line with the Paris climate agreement

2.4 Blockchain in Sustainable Supply chains

Block chain can be used to help achieve visibility in supply chain. Transactions concerning the transfer of goods in the supply chain will be recorded in the blockchain ledger. The identity of everyone involved, the state and quality of the products and the exact location of the products while in transit will be completely visible to all. This information will be permanently stored in the database and can be easily traced if the need arises. Blockchain will also help to reduce errors as products on the supply chain can be verified and tracked and the information will be shared with all members of the network in real time (Leblanc, 2020)

Blockchain solutions find out how the raw materials used for certain products were sourced and how they were manufactured. This information can be beneficial Corporate Social Responsibility initiatives. A sustainable supply chain can also help to identify violations in real time and the problem can be taken care as quickly as possible. Blockchain can also help reduce the issue of fraud. The security feature of the technology makes it tamper proof (Swan, 2018) and help reduce transaction fees in cross border transactions by eliminating the use of middlemen and processing fees.

2.5 Blockchain in Food Distribution

When distributing food, a lot of difficulties cab be encountered as traditional supply methods make tracing the origin of the problem difficult and time consuming. Blockchain technology can be used link the problem to specific distributors, track the supply chain and manage safety measures for the food. Walmart has employed the use of blockchain to track its supply chain for lettuce. The food can be traced back to the growers in a matter of seconds. The lifespan of the food products can be traced from farmer to consumer (Daley, 2019).

Transparent Path is a platform that display the information pertaining to the chain of custody of the food from farm to table in real time with the help of printed sensor technology, third party auditors and blockchain applications. Ripe.io uses blockchain based devices to track food in their supply chain by automating the faming processes. Distributors are able to track food in real time and the consumers can get verified information about their food's journey (Daley, 2019)

Greenfence uses blockchain to authenticate and trace all participants in the food chain of custody. It helps to identify the people working on the chain and certify them, identify the location of the food products and even the equipment used, Farmers, distributors and

consumers are provided with a channel to send and receive messages and allay any fears they may have (Daley, 2019)

2.6 Internally Displaced Persons (IDPs)

According to the United Nations guiding principles on Internal Displacement (1998) ''Internally Displace Persons (IDPs) are persons or group of persons that have been forced to flee or leave their homes or places of habitual residence in particular as a result of or in order to avoid the effects of violence, human rights violations or natural and man-made disasters, and who have not crossed an internationally recognised state border.'' The Internal Displacement Monitoring Centre (IDMC) (2005) says that nations that have the highest number of IDPs in recent years are nations plagued with internal armed conflicts like Sudan and Colombia.

A report by the Secretary General of IDPs in 2012 reveals that the number of displaced persons is multiplying due to excesses committed against the civilian population (Melanie, 2012). The destinations of people fleeing from their homes determines if they will become IDPs in their own country or refugees who have crossed national borders (Helander, 2008). And according to the Internal Displacement Monitoring Centre (IDMC, 2005) even though refugees and IDPs flee their homes, refugees move outside war zones but IDPs remain close to places of conflict and there is a chance that they may be replaced repeatedly if conflicts reoccur. Based on the United Nations report of September 2010 on the rights and guarantee of Internationally Displaced children in Armed conflict since IDPs remain within the jurisdiction of their own state, the responsibility to protect and assist IDPs lies primarily with the state and cannot be entirely shifted to the community.

2.7 Displacement Drivers

2.7.1 *Disasters*

According to the IDMC and the Norwegian Refugee Council, disaster is a serious disruption of the functioning of a community or society resulting in widespread human, material, economic and environmental losses which exceeds the ability of the affected community to cope using its resources(IDMC, 2005) . Section 2(2) of the National Emergency Management Agency states that disaster is any destruction emanating from any crisis, epidemic, drought, floods, tornados, earthquake, train, aircraft accidents and mass deportation or repatriation of Nigerians from abroad. The main element of this definition is that disasters are unwanted events that overwhelm the coping capacity of the affected area. Globally, more than 1.5 million people have been affected by disaster in several ways with a total economic loss of

about 1.3 trillion dollars. Between 2008 and 2015, about 144 million people have been displaced by disasters. Disasters like flooding for instance is worsened due to climate change and can significantly impede the desired progress towards sustainable development (Reference) Disaster can be natural or technological. Natural disasters are events triggered by natural hazards that goes beyond local response capacity and can have dire consequences on the social and economic development of a region. Natural disaster can happen in any part of the world. They are not limited to a specific climate or country. Globally, millions of lives have been lost, countless people have been injured and several others displaced due to natural disasters (unhcr.org).

2.7.2 *Communal Conflicts*

In Nigeria, incidents that result in internal displacement include violent conflicts relating to religion or politics. Also, thousands of people have also been displaced due to natural disasters such as flooding particularly in the North and West, erosion in the South East and oil spillage from oil exploration, production and distribution in the Niger Delta region of Nigeria. Clashes between Fulani herdsmen and farmers, government armed forces and armed groups have also led to the displacement of people. Land disputes in the Bakassi Penisula area of Cameroon forced over 400,000 Bakassi residents to return to Nigeria after a court ruling by the International Court of justice in 2002, Bakassi Penisula was handed back to Cameroon in October 2008.

2.7.3 *Elections/Boko Haram Insurgence*

General elections in Nigeria is another reason for conflicts in several parts of the country leading to displacement of people. The NEMA confirmed this when the agency reported that over 65,000 people were internally displaced as a result of post-election violence across six states in Northern Nigeria. Conflict between Boko Haram and the Nigerian army have also resulted in a large number of people being displaced. In 2015, over 2,151,979 people were reportedly displaced due to Boko Haram activities in the North East of Nigeria (Aisosa, 2019).

2.7.4 *Poverty*

This is another reason for displacement. Rural dwellers leave their homes and move to the city in search of opportunities. Not all of them are successful in this venture and many of them end up homeless and in need of assistance. Urban dwellers also end up homeless and without basic amenities as a result of high unemployment rate.

2.8 IDPs in Nigeria

A report from the IDMC in March 2011, states that the NEMA is responsible for the welfare of IDPs in Nigeria during the emergency phase. The agency does not have the resources to cater to the IDPs long term. The director of the Africa Centre for Gender and Social Development (ACGSD) (2010) stated that non-government agencies end up providing emergency response and support to governmental agencies. The March 24th 2019 report form the United Nations on the conditions of IDPs stated that constraints on resources often lead to non-governmental agencies playing major roles. In many instances, humanitarian agencies provide assistance before the government. According to the IDMC the Nigerian Red Cross (NRC) is the main humanitarian agency in Nigeria with the capacity to respond on short notice. They also provide assistance before the government. The head of the NRC in 2010 stated that the NEMA and the NRC are over stretched in this regard. This was reported when relief agencies come together to provide makeshift camps for IDPs.

2.8.1 *Key Humanitarian Issues Facing IDPs in Nigeria*

2.8.2 *Hunger*

Hunger is a prevalent challenge in IDP camps in Nigeria. IDPs do not get enough food and the quality of the food provided is very poor. The Feeding Committee set up for camps in the North East are known to divert food items for their personal use. The meals they get do not contain all the essential nutrients they need resulting in severe malnutrition in the camps. Severe hunger in the camps have driven young girls into prostitution in a bid to survive. The result of this course of action is the wide spread of Sexually Transmitted Diseases (STDs) in the camps.

2.8.3 *Insecurity*

Among then many challenges they face, insecurity is one of the biggest. In 2015, Boko Haram members attacked IDPs in the camp located in Madagali area of Yobe state. This attack resulted in the death of 12 IDPs. In another attack bombs were detonated one of the tents at the camp resulting in the loss of lives as well as shelter. These people are yet to recover from the psychological trauma of losing their homes and loved ones and their freedom and they are now faced with these threats to their safety. Inadequate security at the camps open IDPs to terrorist attacks and even armed robbery attacks (Olawale, 2016).

2.8.4 *Shelter*

Proper shelter is another challenge that IDPs face. Shelter for IDPs in Nigeria is grossly insufficient and, in most cases, cannot withstand the elements as they are mainly made up makeshift tents. Many existing camps have been damaged by rain, heavy winds and thunderstorms. This has forced many IDPs to resort to seeking shelter in uncompleted building, mosques, churches or tall halls when they are empty. These makeshift camps are grossly inadequate in accommodating the high volume of IDPs currently in the country. Besides the overcrowded nature of the camps, there is also a shortage of water and sanitary facilities. Many of the tents do not have power supply or proper waste management systems. This is a major cause of epidemic outbreaks in the camps (Alobo and Obaji, 2016).

In February 2016, IDPs in Gwoza camp in Borno state were evacuated without alternative shelter (Olawale, 2016). As a result, some of them have moved back to their villages even though some of these villages still suffer from violent conflict issues.

2.8.5 *Malnutrition*

According to (Olawale, 2016) reports revealed that in February 2016, 450 IDPs lost their lives a s a result of malnutrition. Adults and children suffer from malnutrition though children are most affected. A United Nations International Children Emergency Funds (UNICEF) report of April 2015 titled ''Missing Childhood'', revealed that children in IDP camps in Nigeria showed a level 18 threshold of malnutrition, above the globally recognised emergency threshold of 15.

2.8.6 *Health Issues*

The health of IDPs in camps is compromised as they lack proper health facilities. The unhygienic nature of the camps contributes to this problem as well. Malaria and cholera outbreaks are common in the camps and easily spread because of over crowdedness in the, poor sanitary conditions in the camps and lack of access to clean water. These problems are compounded by the fact that health care facilities are not present in some of the camps. The facilities in other camps do have enough to meet their medical needs. The coordinators in these health facilities can only administer first aid as they have no formal medical training (Nnamani, 2017). Polio outbreaks continue to rise in the camps as infants do not have the vaccinations they need (Alobo and Obaji, 2016)

2.8.7 *Corruption*

Corruption is a major problem in the rehabilitation of IDPs in Nigeria. Funds directed to meet the IDPs are usually redirected for personal gratification. The Federal government of Nigeria and international organisations are striving to provide the necessary assistance but

regrettably, the National Emergency Management Agency (NEMA) officials recruited to distribute the food items and other relief items, redirect these resources for their personal use (Kayode, 2015)

2.8.8 *Statistics*

Another issues IDPs face is unreliable statistical data on the number of IDPs in the country. These numbers are required for proper planning and intervention. Several years ago, the National Commission for Refugees (NCFR) released a report that said about 1.5 million people have been displaced in the country. The report did not specify the age or the sex of this population. This kind of information can be misleading when planning (Shedrack and Naurral, 2016).

2.9 IDP Monitoring/Welfare Agencies

Several agencies have been set up to handle the welfare of the IDPs in Nigeria. They include the following but not limited to

The Internal Displacement Monitoring Centre (IDMC) was established as part of the Norwegian Refugee Council in 1998. The IDMC provides verified estimates on the number of people that have been internally displaced or at risk of displacement due to violence or disaster. This information is used to help with planning and policy making (IDMC, no date).

The National Emergency Management Agency (NEMA), located in the Federal Capital Territory and has six offices in Enugu, Port Harcourt, Lagos, Jos, Maiduguri and Kaduna states. This is agency has been mandated by the federal government to provide material assistance to IDPs and repatriated Nigerians regardless of the reason for displacement. Their duties include planning and coordinating and providing emergency relief to victims of disaster and crisis. They are mandated by the government to protect the interest of displaced people in Nigeria (NEMA 2014).

The State Emergency Management Agency (SEMA) is the state version of the NEMA. It is responsible for planning, organising, coordinating and providing relief materials for disaster victims in the states.

The North East Development Commission (NEDC) was set up by the federal Government of Nigeria in October 2017. The mission of the NEDC is to partner with international and local donors to develop and reconstruct the North East of Nigeria due to the humanitarian crisis in the region (NEDC, no date).

The Nigerian Red Cross Society (NRCS) was established by the Nigerian Red Cross act as a voluntary support organisation in 1960. The NRCS has 37 branches across Nigeria. This agency focuses on relating to volunteer management, human resource control, strategic relief fund management, warehousing, monitoring and evaluation (Nigerian Red Cross, no date).

The National Commission for Refugees (NCFR) was established by decree 52 of the 1989 (Act) to safeguard the interest and treatments of people seeking refuge in Nigeria. The commission is in charge of the guidelines and policies concerning refugees and asylum seekers in Nigeria. The mandate was extended to accommodate IDPs in 2002 by then President Olusegun Obasanjo (www.ncfrmi.gov.ng).

In line with the United Nations resolution, the National Human Right Commission was established by the National Human Rights Commission Act in 1995. The resolution encourages all member states to establish human rights institutions to promote and protects the rights of the people. The aims of this resolution. The NHRC is a channel to enhance the enactment of human rights and ensures that human rights are enforced (www.nigeriarights.gov.ng).

Of all these agencies the National Emergency Management Agency (NEMA) is most active in in responding to emergency situations concerning IDPs. providing the necessary support located in the Federal Capital Territory and has six offices in Enugu, Port Harcourt, Lagos, Jos, Maiduguri and Kaduna states. This is agency has been mandated by the federal government to provide material assistance to IDPs and repatriated Nigerians regardless of the reason for displacement. Their duties include planning and coordinating and providing emergency relief to victims of disaster and crisis. They are mandated by the government to protect the interest of displaced people in Nigeria (NEMA 2014).

Of all these agencies, NEMA is the most active and most consistent. In 2016, NEMA collaborated with the International Organisation for Migration (IOM) to create a Displacement Tracking Matrix (DTM). This matrix was developed in an effort to collect proper data of IDPs in Nigeria. The DTM revealed that 389,281 people in 2013, 868,355 people in 2014, 1,846,999 people in 2015, and 1,814,066 people in 2016. These figures help NEMA with planning for the IDPs. In the height of attacks of Boko Haram insurgents in Borno and Yobe states in 2015, a lot of people were displaced. NEMA deployed staff from across the country to the affected states. NEMA provided food items to the affected people and their host communities. The following table shows the items that has been sent to the affected people in 2015.

	Items	Weight per item (kg)	Quantity	Metric Tons
1	Rice	50	120,000	6,000
2	Maize	100	70,000	7,000
3	Beans	100	9,000	900
4	Sugar	50	30,000	1,500
5	Flour	50	1,800	90
6	Salt	50	7,500	375
7	Tin Tomatoes		10,500	

Table 1 - Food items provided by NEMA in 2015

A medical team with a mobile intensive care ambulance was deployed to the North East to support the medical facilities at the camp. However, these items do not always get to the IDPs. The representatives of these agencies have been known to divert these items for their personal use. In 2018, the Director General was accused by members of the House of Representatives of mismanaging billions of naira meant for displaced persons but was exonerated of wrongdoing. This is a very situation in Nigeria concerning the welfare of IDPs in Nigeria. This poses a big problem for the IDPs as these items are necessary for their survival. The purpose of this study is to assess the possibility of using the proposed technology to help the IDPs overcome the selected problems in the study.

2.10 Blockchain for Sustainable Development Goals

Jeffrey Sachs in an article titled "Why we need to invest more in Sustainable Development" published in 2016 said ''Sustainable development is more than just a wish or a slogan, it offers the only realistic path to global growth and high employment. It is time to give sustainable development the attention and investment it deserves.''

A report from the World Economic Forum tells us that about 10% of the Gross Product by 2025 will be stored on blockchain. Major companies like IBM and Microsoft have inaugurated various services that use the blockchain technology. The finance and food invested is heavily invested in the related applications as this makes transactions easier to carry out, more secure and also ensure food safety (WEF, 2020)

Blockchain can be used to promote transparency, reduce fraud and corruption (Kshetri, 2017). As this is a fully automated technology, transaction costs for international payments will be greatly reduced as there will be no middlemen, paper vouchers or card processing fees as is normal for traditional banking system. Blockchain is already being used to combat corruption, tackle problems associated gender equality, improved land tenure and property rights by creating secured digital identities. Blockchain is now being used to trace humanitarian aid to ensure that they get to the people that need them (Kenny, 2017). The

Start Network, an international aid agency is using blockchain to deliver aid to people affected by crisis (Pooterman, 2017).

Blockchain can be used to provide visibility in the supply chain when good are being transferred and the transfers will be recorded in the ledger. Provenance, a blockchain based application is being used to track materials and products in a transparent and secured manner (Reference). The government of Estonia implemented an e-residence scheme using blockchain technology. This scheme allows residents of Estonia to record their marriages, births and business contracts and access public services irrespective of their residency status (Preiss, 2016). In 2015 Aid Tech used blockchain technology to enabled applications to provide refugees in their camps in Lebanon with digital identities. Their digital identities were connected to vouchers that enabled them buy food and other items. The United Nations for Project Services (UNOPS) launched a blockchain assisted pilot project in Moldova to protect children and women from illegal trafficking (Gorey, 2016).

2.11 United Nations Sustainable Development Goal 2 (SDG 2)

Hunger and malnutrition are major challenges that many people all over the world face on a daily basis. The UN Sustainable Development Goal 2 is one of the 17 sustainable development goals proposed by the United Nations, targeted to be achieved by 2030. The UN SDG 2 aims to end all forms of hunger and malnutrition by 2030 thus ensuring that people all over the world especially children have enough food to eat every day. The UN SDG 2 is focused on ending hunger, achieving food security and improved nutrition and promoting sustainable agriculture. To achieve the UN SDG 2 the United Nations through the World Food Programme pledges to end hunger five steps. The UN WFP pledges to reach the most vulnerable in the society pave way from the farm to the market, reduce food waste, encourage a sustainable variety of crops and make nutrition a priority.

To address the issues of hunger, the United Nations World Food Program (WFP) implemented the Building Blocks project which is powered by Ethereum a blockchain application developed by Vitalik Buterin in 2013. This application can be installed on a smartphone and used to transfer food to vulnerable families (Laura, 2018). The WFP was also able to transfer cash to over 19,000 Syrian refugees in camps located in Azraq Jordan using its blockchain payment platform. These refugees are able to buy from local retailers by scanning their eyes using a biometric reader. Every transaction made is recorded on blockchain. The WFP is currently using Ethereum to provide help in other regions. Millions of dollars are being saved when blockchain applications are used for these transactions. The automated nature of the technology helps to eliminate the use of middlemen, physical

vouchers and also avoid bank card processing fees. The WFP currently feeds about 100 million people across 80 countries.

And according to the United Nations Human Rights Office, IDPs are entitled to the right to humanitarian assistance. They have the right to be assisted with food, medicine and shelter and so they have a basic human right to the UN SDG 2.

2.12 Technology Adoption

This is when individual users and users in an organisation make the decision to accept and use a new technology (Hall and Khan, 2002). It is the stage where they users mentally accept the new technology.

The Unified Theory of Acceptance and Use of Technology (UTAUT)

(Venkatesh et al., 2003) designed the Unified Theory of Acceptance and Use of Technology, a technology acceptance model to assess an environment to see if new technology can be introduced and adopted. In order to facilitate the adoption of a new technology, it is necessary to examine the environment the technology will be used in and identify these four constructs

Performance expectancy: This construct checks to see if adopting the new technology will increase job performance

Effort Expectancy: This construct checks to see if the the individuals in the environment will be willing to use the new technology if adopted

Social Influence: This construct checks to see if the individuals in the environment will be willing to use the new technology if other people in the environment use it too

Facilitating Conditions: this construct checks to see if there the environment has the infrastructure required for the technology proposed. For example, to adopt blockchain technology in any environment, there has to be basic internet connection in the environment

2.13 Conceptual Framework

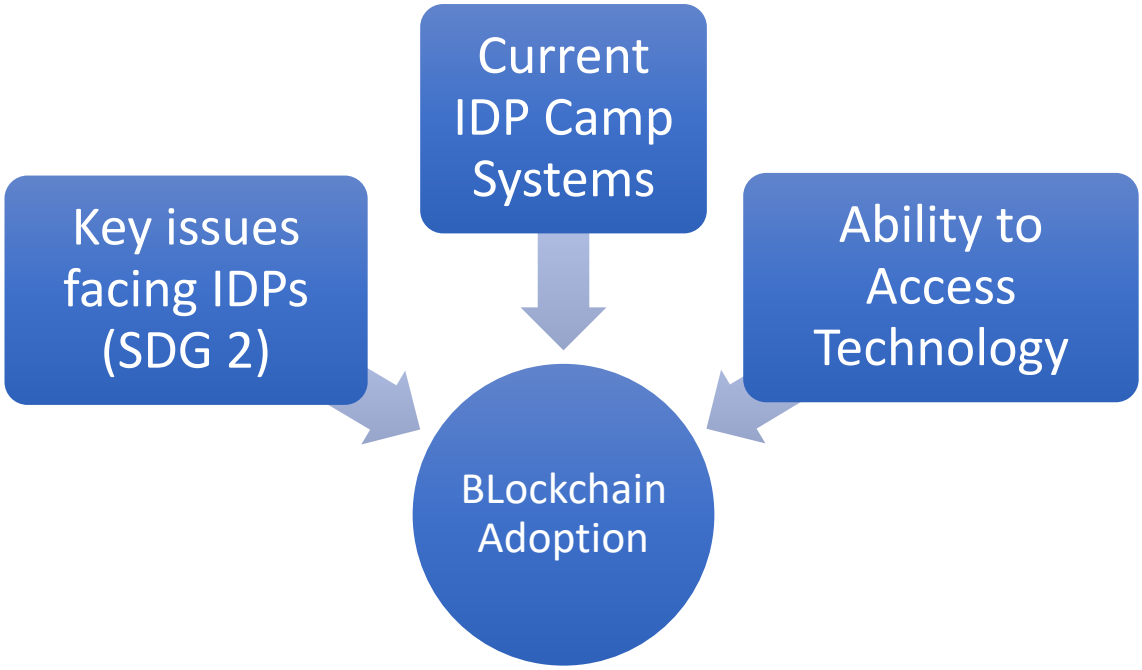

Fig. 1 - The Conceptual Framework

The conceptual framework of this study will set the stage for the presentation of research questions that will drive this investigation. This research is based on the problems IDPs in Nigeria experience in the camps. The conceptual framework seeks to assess the possibility of adopting blockchain technology to achieve UN SDG 2 in IDP camps in Nigeria by examining the key issues faced by the IDPs in the camps, focusing on issues relating to the UN SDG 2 which involves the procurement of food materials for the IDPs. The study is also going to examine the current system used to manage the camps and the ability of the camps to access technology. For the purpose of this study however, the IDP camps will be limited to the camps in the Federal Capital Territory, Abuja.

3 Research Methodology

3.1 Overview

This chapter will present the philosophy, approach and strategies employed by the researcher in carrying out the study. It will also show the way data was collected. The procedure and the rationale behind the choices made will be also be stated. This research work was carried out following the guidelines in the research model presented by (Saunders et al, 2014). This model outlines all the different elements the researcher

examined and applied to create the overall design for this study and collect and analyse the data required for this research work.

3.2 Research Philosophy

This study seeks to broaden existing knowledge on blockchain and how it can be used help achieve the United Nations sustainable development goal 2. The researcher used existing theories supported by empirical evidence to explain the research problem and develop the conceptual framework to achieve the overall aim of the study. This research work is based purely on facts and does not take the personal beliefs of the author into consideration. This make positivism the ideal approach to help the researcher some to a conclusion. A philosophy based on positivism deals with only authentic information about the subject being studied.

3.3 Research Approach

The deductive approach to research allows the researcher to adopt existing theories to explain the phenomena under consideration and adopt an approach to test it (Silverman, 2013). The researcher is adopting this approach because of the positivist philosophy. The deductive approach is suitable for a positivist approach and allows the researcher to form a hypothesis and statistical analysis of the expected results (Sneider and Larner, 2009). The deductive approach allows the researcher develop assumptions based on the existing theories reviewed and test these assumptions using the research strategy (Wilson, 2010). The assumptions will be tested against the observation at the end of the research process which will then be accepted or rejected. The deductive approach can be used for both qualitative and quantitative research.

3.4 Research Strategy

For this study the researcher will use the mixed method strategy to collect the data required for the study. A mixed method strategy involves the use of qualitative as well as quantitative data collection methods. Qualitative data is collected using open ended questions in interviews and focus groups and quantitative data is collected using questionnaires in a survey using close ended questions and this data is analysed using statistical tools. This method gives the researcher an opportunity for the researcher to look at the subject matter from different perspectives.

3.5 Research Choice of Methods

This section outlines the manner in which data was collected. Data for research study can be collected in three ways. Data can be collected using questionnaires in a survey. Surveys are easy to adopt and cost little to administer. This method of data collection is associated with quantitative research. Data can also be collected by conducting interviews and usually used in qualitative research. Another way to collect data for research is to combine the two methods. The researcher will adopt the mixed methods approach to achieve the aims and objectives of this study. The mixed method approach allows the researcher use more than one source of information when collecting the data required for the study. Data will be collected using open ended interview questions and closed ended questions in surveys. Using this strategy, the researcher is able to understand the depth of the problem the study is attempting to address. It allows the researcher to look at the problem from more than one angle.

3.6 Research Time Horizons

Time horizons describe the time required to complete the investigation. The time series for this study is cross sectional. This means that the investigation must be completed at an agreed time. The researcher will collect and analyse and draw conclusions within this time frame.

3.7 Research Data Collection and Analysis

This study will be carried out using mixed research methods. Primary data was collected using questionnaires administered in IDP camps in Abuja Nigeria and questionnaires will be used to collect data from IDPs in camps in Abuja Nigeria and the also from interviews conducted among IDP camp coordinators also in Abuja, Nigeria. The secondary data will be collected from the works and opinions of other researchers (Newman, 1998).

3.8 Sources of Research Data

Data required for this study will be collected by carrying out a survey using questionnaires and conducting interviews. The questionnaires will be created using google forms and the link will be sent to participants and the interview questions will be sent to participants via

email prior to the interview. The question asked will be questions directly related to the questions this study is trying to answer. The questionnaire will contain close ended questions focusing on the research objectives and questions. And Semi structured questions will be used to collect information during the interviews. Semi structured questions will be used to collect information during the interviews. Secondary data was collected by reviewing past literature on the subject matter. Secondary data was collected from academic websites, online articles, blockchain forums and from the website of blockchain companies.

3.9 Research Design

The research design shows the strategy employed by the researcher to carry out the investigation. For this study, the researcher will use the descriptive approach in answering the research question. This approach will help the researcher collect a huge amount of data that will help provide a detailed analysis of the subject matter yield data that will lead to important recommendations. This is because we wish to apply a new concept in solving a social problem and this method enables us to describe how the concept works now.

3.10 Sample and Sample Size

Sampling is the process in which researchers select the people or organisations from the population they are interested in studying. A part of this population is selected, and participants will be selected from the chosen sample to help the researcher draw the expected conclusions. Participants from a sample can be chosen randomly or purposefully. For this investigation, the researcher will pick randomly select members of the sample population to participate in the surveys and interviews. The overall sample size for this research is 250. 90% of this population will participate in the survey. This population will consist of the IDPs and the remaining 10% of the population consisting of the camp coordinators will be interviewed.

Random sampling involves picking participants at random. Each participant has an equal opportunity to be chosen as the sample. In stratified random sampling the sample population is divided into strata and then a participant is randomly picked from the strata. Multistage sampling is used when the population is too big or scattered. Then sampling will be done in stages (Flick, 2017).

The overall sample size for this research is 100. 85% of this population will participate in a survey and the remaining 15% will be interviewed to get an insight of the situation in the camps as well as insights into the organisations in charge of the camps and the IDPs in these camps.

3.11 Sample Limitation

This investigation will be limited to the IDP camps in Abuja, Nigeria. This is because the time frame required to carry out the investigation does not permit a wider population.

3.12 Access and Research Ethics

Primary data for this study was collected using a survey and interviews which was administered to the participants. Participants will be accessed by going to the camps in the case of the IDPs and camp coordinators. Interview questions will be sent to participants via email. The primary data will be supported by secondary data will can be accessed via academic websites and online articles. In relation to ethics, the researcher will seek the consent of the respondents before the survey for permission to begin and after the survey for permission to use the information provided for the study. Interview respondents will be informed prior to the interviews and the questions will be sent to them before the day the interview is conducted. All personal information about respondents will be kept anonymous. The information collected will not be abused and participants will be free to walk away if they are not comfortable at any point during the survey or the interviews. The author will abide strictly by the Griffith College guidelines concerning research ethics.

4 Data Analysis and Presentation of Findings

4.1 Overview

This chapter of encompasses the analysis and discussions of the results derived from the primary data collected during this investigation as interpreted by the researcher.

As mentioned in the previous chapters, this research study assessed the possibility of adopting blockchain technology in achieving the UN SDG 2 in IDP camps in Nigeria. Data was collected from five IDP camps in the Abuja, Nigeria. A total of seven respondents were interviewed. All seven respondents were administrative officials and coordinators from the five camps visited. The use of semi structured interviews questions was to encourage the participants to express their opinions and feelings on the subject. The interviews took place via telephone conversations with the participants in August 2020 and lasted for 30-40 minutes.

4.2 Qualitative Analysis

The themes used for this analysis emerged from the codes created from the data obtained from the interviews. The codes were then used to identify patterns and trends to identify the themes to explore relationships between the themes. The deductive approach, which is consistent with the positivist paradigm, was used to analyse the primary data. This approach involved the identification of a pattern of thought using thematic analysis to develop theories or modify the adaptation from the data obtained from the respondents.

Before the interviews were conducted, the participants were sent an introduction to the purpose of the research. A form asking for their consent to participate in the interviews was also sent to them to establish and build trust and assure them that their responses will anonymous throughout the process and will only be used for the purpose of the investigation. Candidates for participation were selected based on their position in the camp administration.

Participant	Position
P1DCC	Camp Coordinator
P2DCAC	Assistant Camp Coordinator
P3KICC	Camp Coordinator
P4LCC	Camp Coordinator
P5KUCC	Camp Coordinator
P6WCC	Camp Coordinator
P7WCAC	Assistant Camp Coordinator

Table 2 - Participant Codes and their positions

Transcripts of the interviews were analysed to discover relationships between the data collected and literature reviewed. Key phrases identified from the transcripts were assigned codes. The codes described the opinion or feelings of the participants highlighted. The codes were used to identify common grounds and patterns and organised into them into several headings. This revealed the emerging pattern of opinion. The codes were concepts or phrases assigned to individual feelings and opinions expressed by participants during the interviews. This process provided a summarized overview of the predominant recurring opinions and feelings expressed by the participants. The themes were by putting codes with similar opinions into a broader perspective. During this process, some codes were discarded because they were too vague or irrelevant to the research objective, some were refined, some became themes on their own and others were grouped together to make a new theme. While reviewing the themes, I compared the themes generated with the data obtained to make sure they were a true representation of the data collected. To ensure that the information to be analysed was accurate I contacted the participants again to confirm the details. Finally, the themes were named and used in presenting the analysis of the data collected. My analysis of the interviews uncovered these themes: Government support, lack of food supply, blockchain intervention and IDP empowerment. The findings are a reflection of the opinions of the IDPs coordinators as interpreted by the researcher

4.3 Findings

4.3.1 *Government Support*

This theme was used to gain insight into the research objective that aims to understand the systems used to cater for the needs of the IDPs. The researcher analysed this theme

to gain insight into the research objective that seeks to understand the systems used for the management of the IDP camps and the status of the UN SDG 2. The perception of the researcher before the collection of data for the investigation was of the opinion that the government was responsible for the welfare and management of the IDP camps but the analysis of this data helped to confirm that there was no support from the government concerning the welfare of the IDPs at the camps that were visited. This theme measured the perception of the government's efforts and involvement in the welfare of the IDPs in Nigeria. The researcher was able to understand from the responses the respondents gave when how asked how the camps where managed and how food got to them in the camps that they received no assistance from the government. The lack of interest and support from the Nigerian government has created a challenging environment for the IDPs welfare and survival. All the participants in the camps that were visited agree that there was no support from the government. This show that the IDPs are left to fend for themselves and this is a difficult task as most of them are far from home and have no jobs. According to one respondent ''The host community treat the IDPs like outcasts. They think the youths, especially the boys, are criminals. The area boys in the host community also invade the camps to rob the IDPs of what little possessions they have left. They also rape the women. It is very sad. We have called on the government several times to come to our aid, but nothing has been done. We have been here for over two years now. No help from the government since then''. P4LCL

The table below shows some verbatim quotes from other respondents when asked to describe the system used to manage the IDP camps

Theme	Quotes
Government Support	*''We manage the camp by ourselves. We don't get any assistance from the government. Sometimes NGOs and well-meaning individuals bring food and items to the camp''- P1DCL* *''We take care of ourselves. No help from the government. We do everything for ourselves''. - P5KUCL*

Table 3 - Government Support Theme

4.3.2 *Lack of Food Supply*

This theme was created to help us understand the research objective concerned with reviewing the status of SDG 2 in the IDP camps. This theme emerged after analysing the data that answered the interview question ''What are the key challenges to IDP management in the camps''? According to the literature reviewed, the government sends relief items to the IDPs in the camps and even though the food items usually don't get to the IDPs there was

effort put into providing food and other relief items to the IDPs. However, it was discovered while talking to participants during the data collection process, that this was not the case in the camps in Abuja, Nigeria. And after making some findings, I discovered that the efforts of the government seem to be concentrated on the IDP camps in the North East as they seem to be in worse conditions than the IDPs in the camps that were visited during this investigation. This now tells us that the camps that are outside the North East may have been marginalised or the perception of the government of the city camps is that the camps better off than the ones in the North East villages. The table below show some of the quotes from the respondents.

Theme	Quotes
Lack of food supply	*''Truly we are faced with many challenges in the camp. We don't have anything to do to support ourselves here. We will be happy if we can get something to do to buy food especially for the children. We in Wassa camp don't get anything because we are very far from town. People don't like coming here.'' - P7WCA* *''We don't have food. We don't have clean water. We have lost several children to hunger and malnutrition. They are always sick as a result''. - P3KCL*

Table 4 - Lack of Food Supply theme

4.3.3 *Blockchain Intervention*

This theme was created because it was clear from the data collected that the system used to manage the welfare of IDPs is failing and urgently needs to be replaced with a sustainable solution. This theme also addresses the research objective concerned with exploring blockchain technology for adoption in managing IDP camps

4.3.4 *IDP Empowerment*

This theme was created based on the responses that were received from the respondents for the interview question that asked respondents ''what can be done to achieve the UN SDG 2 in the camps''? It allowed the researcher to understand the current status of the UN SDG 2 and proffer solutions to achieve this goal in the camps and what the IDPs felt will be a solution to address the problem of hunger. All seven respondents said ''engaging in farming'' and skill acquisition will help them achieve the UN SDG 2 without being totally dependent on the government or NGOs. This was an interesting theme to did cover because the UN SDG 2 aims to end hunger and promote sustainable agriculture as well. Another

reason is the fact that during the interview unemployment was repeated across the interview

Below are some quotes from participants when asked ''how SDG 2 can be achieved in their respective camps

Theme	Quotes
IDP Empowerment	*''We don't have food to give the children. It is not easy to see children hungry and you don't have foods to give them That is our major problem. The IDPs are ready to work to feed the children but no work for them to do. Many of them are farmers in our village. They will not mind growing our food. But there is no land that we are permitted to use''. P4LCL* *''if we can learn a trade, we will be happy. If the government can empower us with some skills, we can look after the children well. Food will not be a problem. We are not here by choice. We are not beggars. We just found ourselves in this situation'' P6WCL*

Table 5 - IDP Empowerment

4.4 Quantitative Analysis

A hundred IDPs were involved in the survey to find out what they thought about the conditions in their camps.

4.4.1 *Demographics*

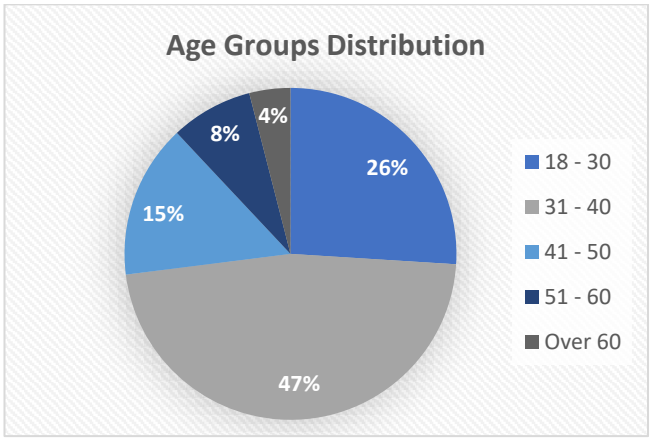

Chart 1 - Age Group Distribution

The majority of IDP are within the 31- to 40-year-old bracket, while about a quarter or IDPs are below the 40-year age mark. This shows that IDPs are mostly the younger Nigerians.

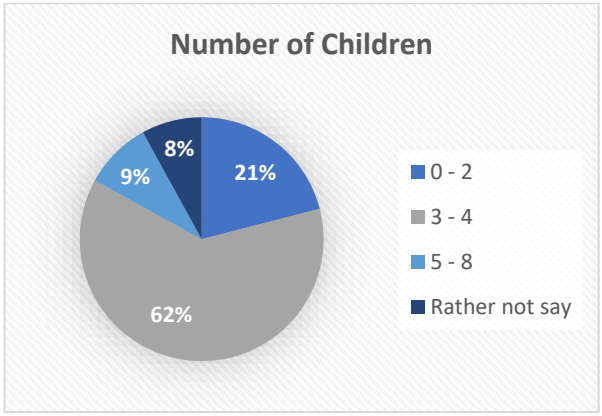

Chart 2 - Number of Children

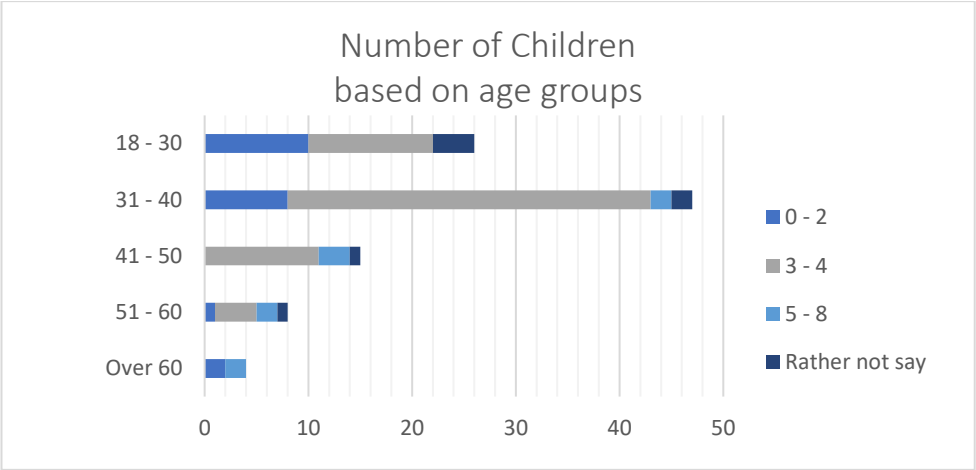

Chart 3 - Number of Children Based on Age Groups

There is strong evidence that children are most affected by displacement since well over half of IDPs have children. Most parents are in their thirties, which also shows that younger children are affected.

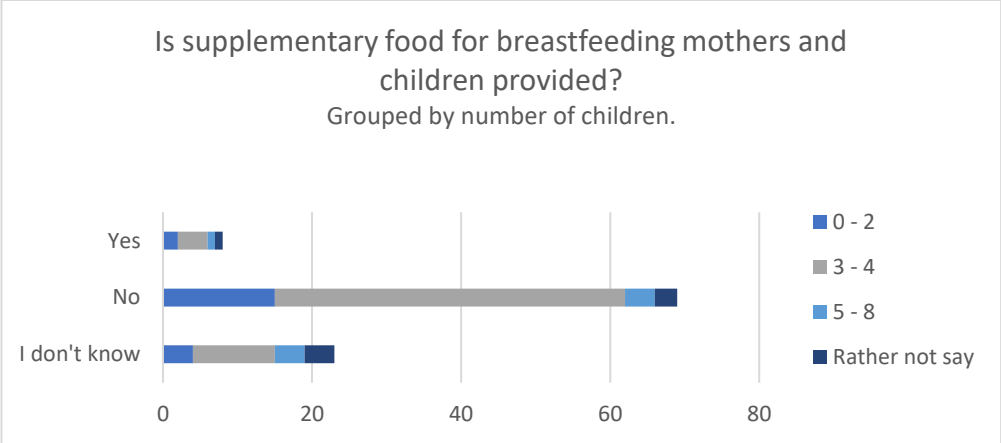

Chart 4 - Supplementary food for breastfeeding mothers provision

Looking at the chart above, it can be deduced that most of the IDPs with children (over 50%) believe that supplementary food for breastfeeding mothers and children isn't adequate. Therefore, there is a clear deficiency for children and mothers in IDP camps.

4.4.2 *Medical Services*

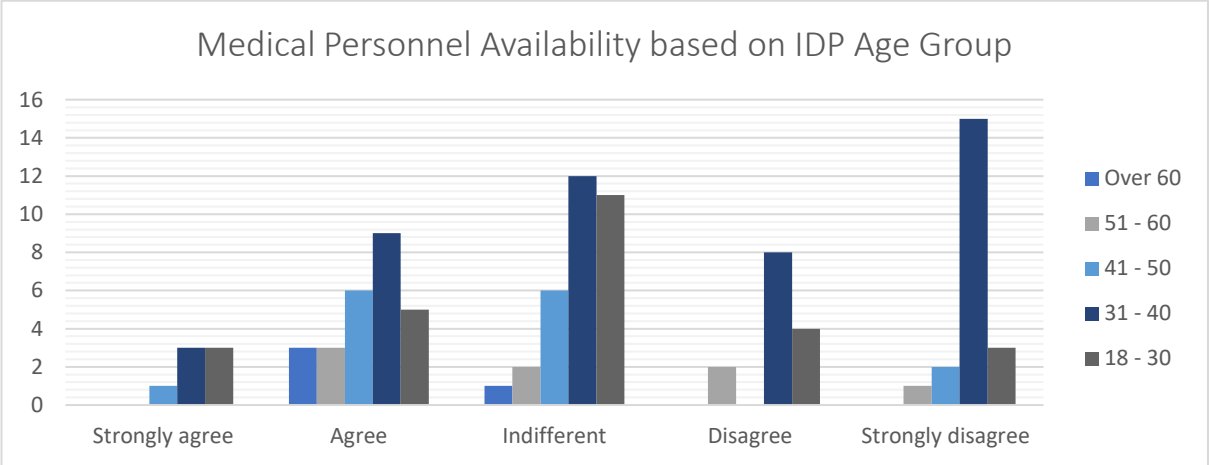

Chart 5 - Medical Personnel Availability based on IDP Age Group - Spilt

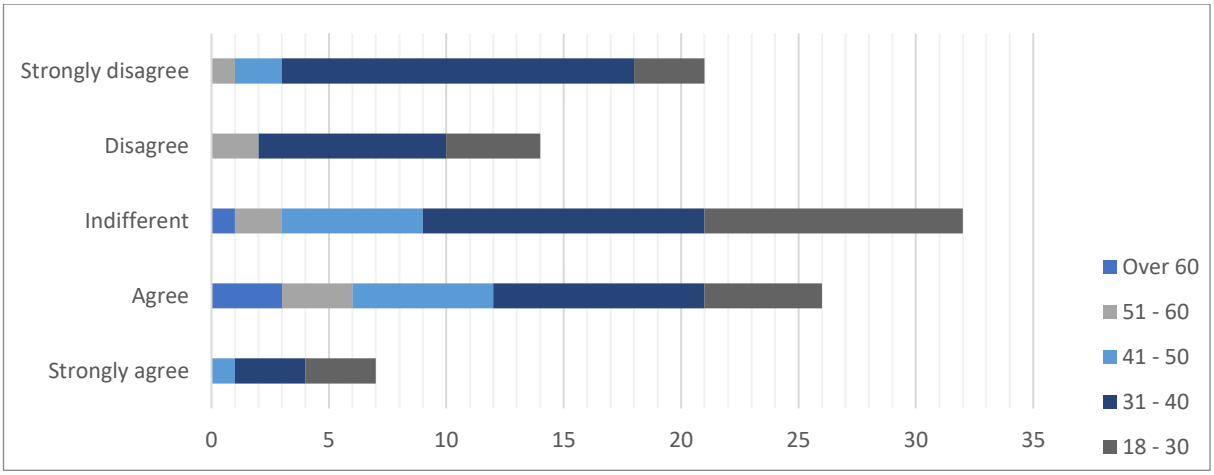

Chart 6 - Medical Personnel Availability based on IDP Age Group - Grouped

The response to the availability of medical personnel in the camp shows that there is lack of medical assistance to a specific age group – "31 – 40". It also shows most IDPs do not rely on the medical staff assigned to camps since a third of IDPs are indifferent about services made available.

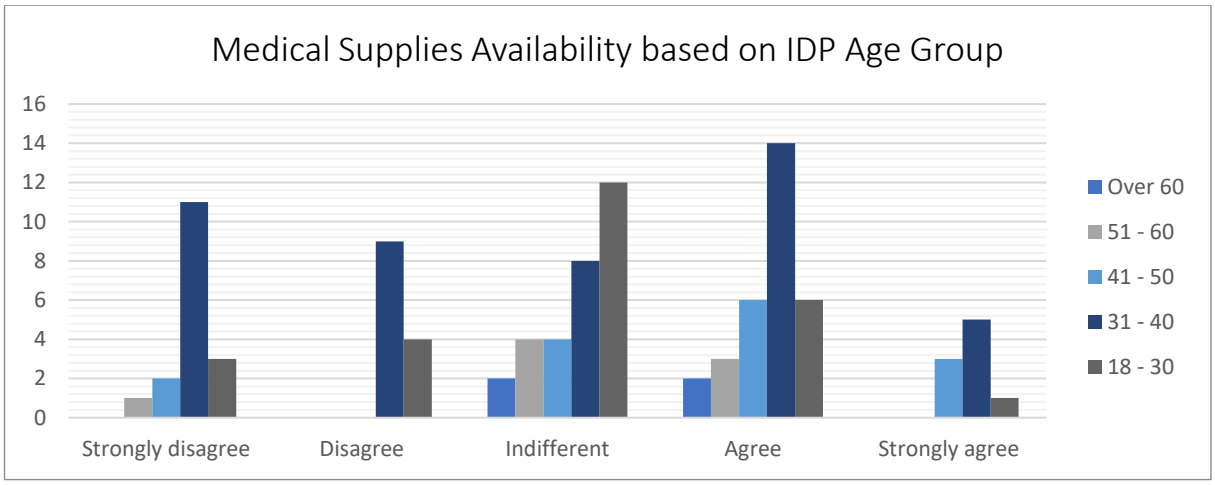

Chart 7 - Medical Supplies Availability based on IDP Age Group - Split

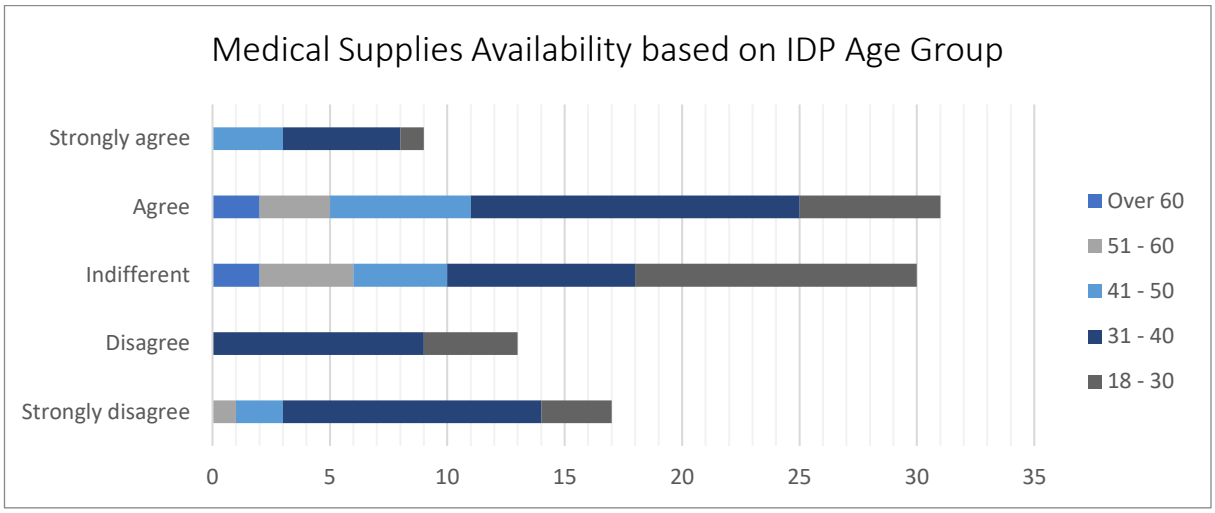

Chart 8 - Medical Supplies Availability based on IDP Age Group - Grouped

From the charts above, it is evident that there is a disparity between the IDPs in the camp. Some believe supplies are available and others don't.

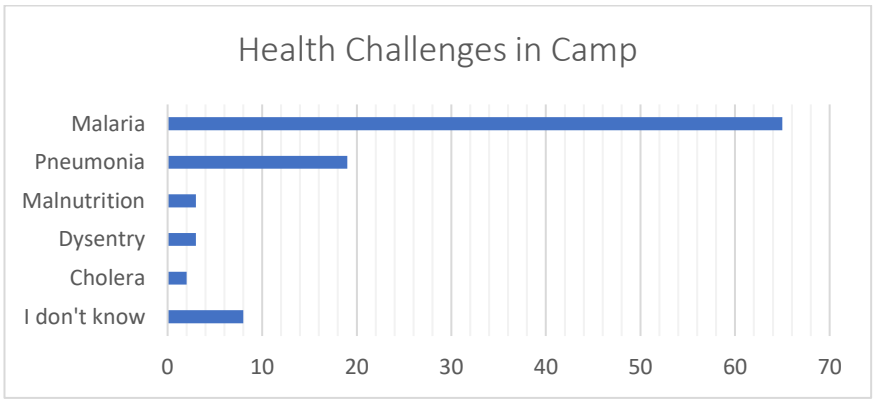

Chart 9 - Health Challenges in Camps

Based on this graph above, malaria and pneumonia are to the top diseases considered challenged in the IDP camps. These are diseases that are caused by exposure to the elements. This states to show that the camps clearly have a problem when it comes to sheltering their IDPs.

4.4.3 *Camp Status*

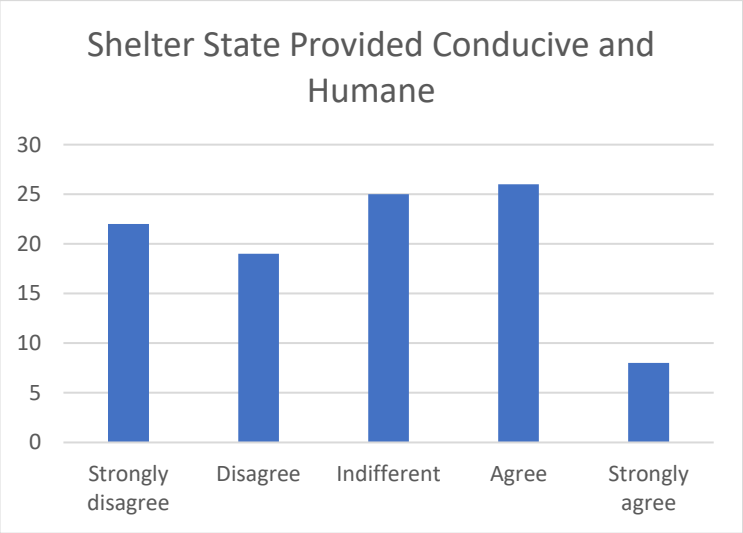

Chart 10 - State of Shelter Provided

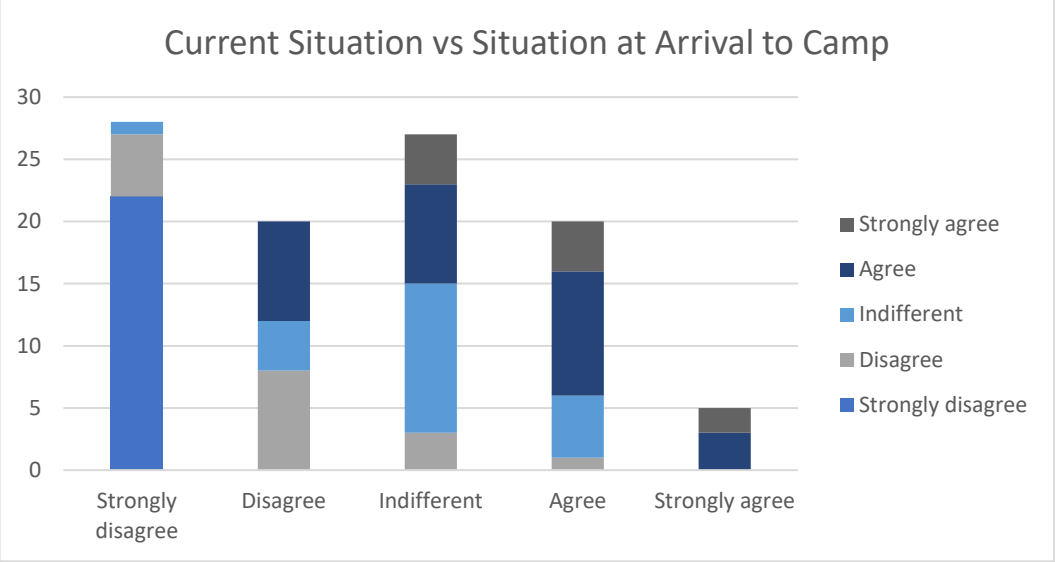

Chart 11 - Current Situation vs Situation at Arrival to Camp

The bar chart above compares the views of IDPs of their camps from the time of arrival until the time of the survey. The following are observed

1. 22 of the 28 (78.57%) who "strongly disagreed" that the camp's state was conducive upon arrival did not change their views at the time of the survey.
2. 8 of the 20 (40%) who "disagreed" that the camp's state was conducive upon arrival did not change their views at the time of the survey.
3. 12 of the 27 (44%) who remained "indifferent" that the camp's state was conducive upon arrival did not change their views at the time of the survey.
4. 10 of the 20 (50%) who "agreed" that the camp's state was conducive upon arrival did not change their views at the time of the survey.
5. 2 of the 5 (40%) who "strongly agreed" that the camp's state was conducive upon arrival did not change their views at the time of the survey.

6. 48 of the 100, almost half of the camp, disagreed that the camp was conducive and 25 of the 100, a quarter, agreed the camp was conducive.

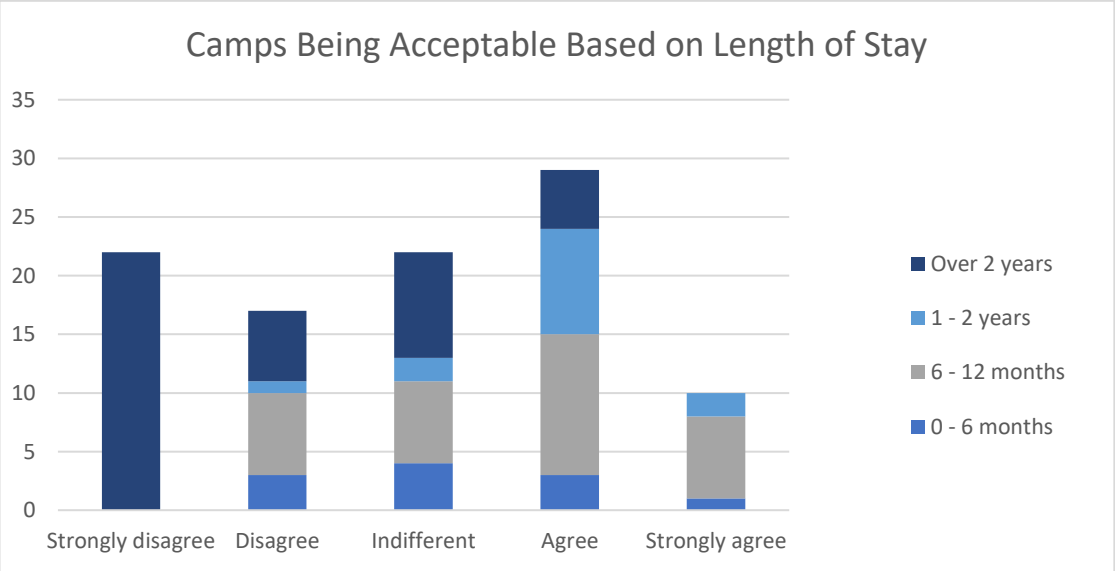

Chart 12 - Camps Being Acceptable Based on Length of Stay

The graph above shows the IDPs' view on whether the camps are acceptable. All IPDs (22 of them) who have been in their camps for over two years disagree while 16, 7 of them who have been in their camps between 6 to 12 months disagree.

4.4.4 *Food Delivery & Quality*

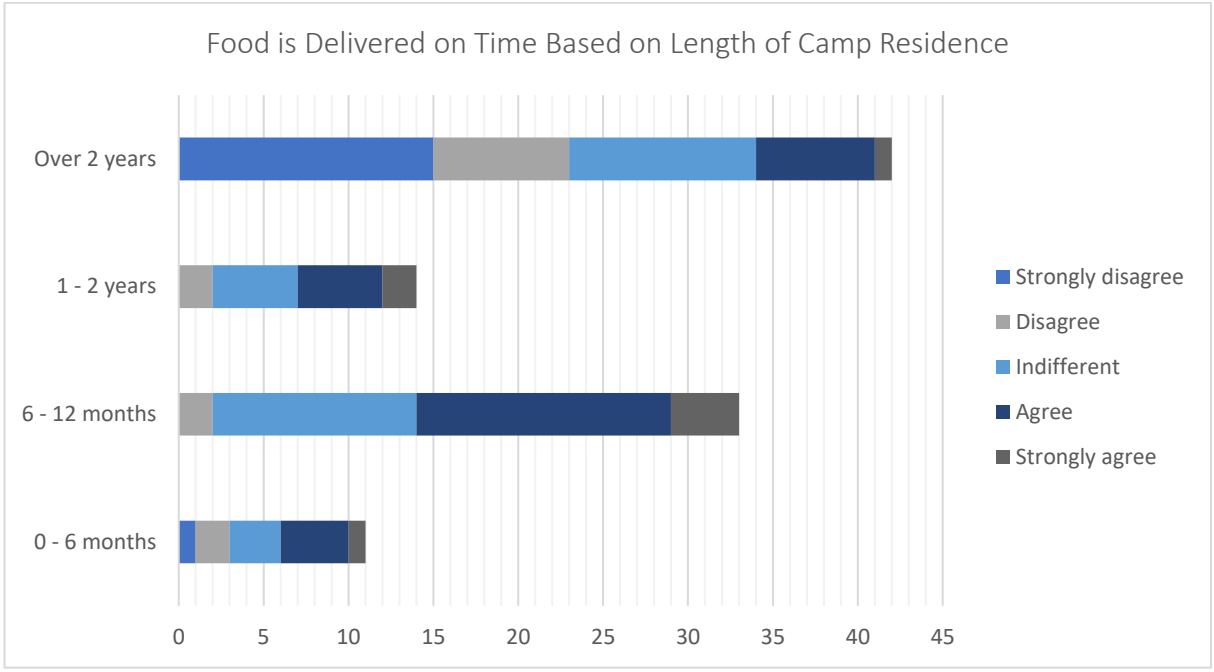

Chart 13 - Food is Delivered on Time Based on Length of Camp Residence

It can be shown that 18 of the 19 IDPs who have spent over 2 years in the camp strongly disagree with the food delivery. This could be an indication of deteriorating services of food delivery over time.

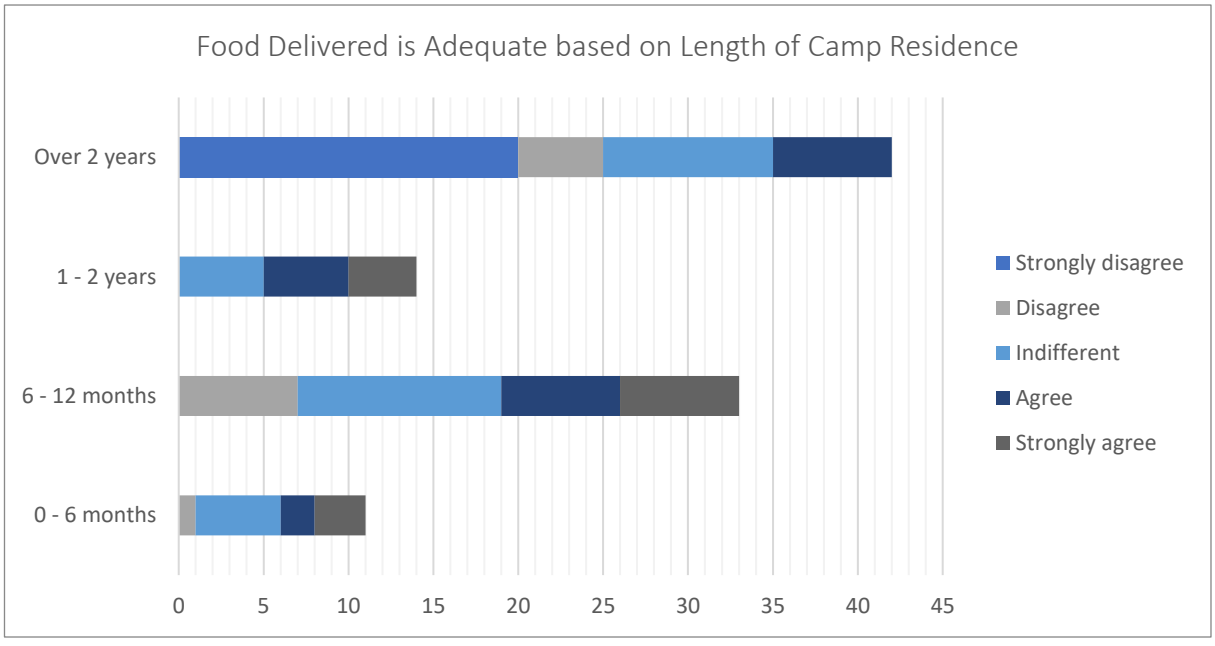

Chart 14 - Food Delivered is Adequate based on Length of Camp Residence

A similar trend can be seen when comparing the length of camp residence and the adequacy of food delivered. All IDPs that have been displaced for over two years think strongly against the adequacy of food delivery in their respective camps.

4.4.5 *Government Support*

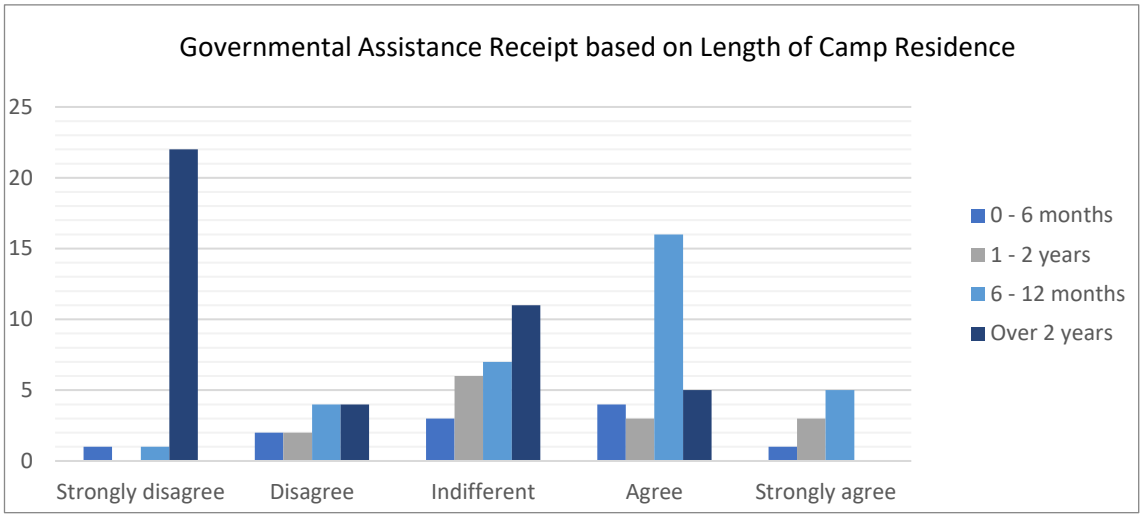

Chart 15 - Governmental Assistance Receipt based on Length of Camp Residence - Split

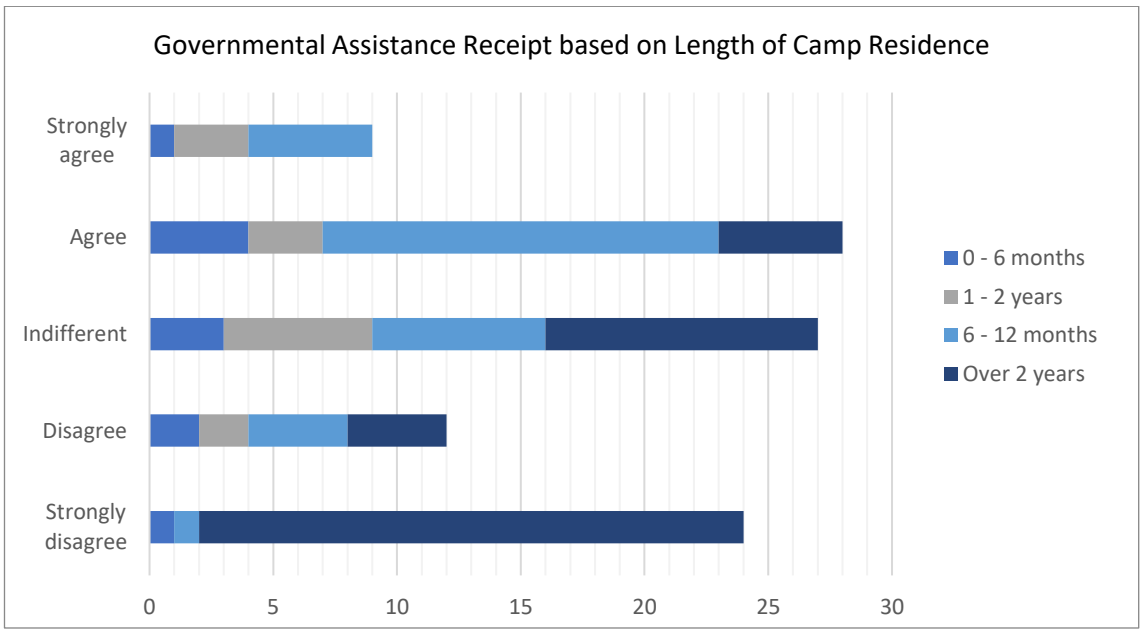

Chart 16 - Governmental Assistance Receipt based on Length of Camp Residence - Grouped

The responses from the IDPs are mixed – 36% disagree the government is giving necessary assistance while 37% agree the government is doing what they ought to do and are meeting expectations. This could be due to the fact that the data collected wasn't separated by IDP camps, since there is a possibility that the government is involved more in some camps than others. It could also be due to the fact that the respondents do not know what the government's roles should be in their situations and are either expecting too much or too little.

4.5 Integration of Data

4.5.1 *Final Findings*

Theme	Interview	Survey	Integration
Lack of food supply	Yes	Yes	Convergent
Government Support	No	Inconclusive	Divergent
IDP Empowerment	Yes	Inconclusive	Divergent

Chart 17 - Final Findings

Both the interview and the survey agree that there is not enough the camp lack food

5 Concluding Thoughts

The use of blockchain technology is only one of the steps that can be taken to improve the quality of life of IDPs in Nigerian camps and also achieve the UN SDG 2. Based on the conversations I had with some of the interviewees, IDPs can engage in farming which is one of the goals of the UN SDG 2. They want to be empowered to cater for themselves. I think that is another field of research to be looked into.

5.1 Implications of Findings for the Research Questions

The research showed that the UN SDG 2 can be achieved using blockchain technology

5.2 Contributions and Limitations of the Research

It was really difficult collecting data from Nigeria while I was in Ireland. I was dependent on other people for most of the collection. Even though I was able to talk to some of the interviewees over the phone, it would have been better to talk to them face to face as the communication line was unstable. Many times, during a conversation, the communications line disconnects, and I am unable to reconnect with the interviewees for a while. It took several weeks to finally get the data together, but by that time I had only one week left to analyse the data using a method I was not familiar with. During the analysis I discovered that the responses to the survey questions were mostly of different opinions and differed from the qualitative data. I was not able to perform a proper analysis of the data.

I would recommend that in the future, data should be collected by a dedicated research assistant on the ground if the researcher is unable to gather the data personally. It will be very helpful if the research assistant is familiar with the concept of the investigation so that the right questions will be asked where possible. I also feel that the sample size for both methods was not large enough, and the research can be extended to more than one town to get a clearer picture of the situation for a more accurate interpretation.

I ran into some challenges in the analysis. One major challenge was the research assistant in the field failed to separate the collected data based on camps. I realised that there seemed to be mixed responses being somewhat equally distributed among all IDPs, I believe that the responses were generally different based on certain camps. I would have insisted that the data collected was differentiated based on camps and I would have collected more responses per camp.

5.3 Recommendations for Practice

During the conversations I had with the IDP Camp staff, some recommendations were made by them. The IDP camps have a lot of farmable land around it. The staff and IDPs believed the land could be used for farming to generate income and food to the camps without total dependence on the government and NGOs.

However, the IDPs and the camp staff do not know the procedures and steps to go about asking for permission to acquire the land for agricultural purposes as well as train IDPs who have little or no farming knowledge. This would go a long way in providing food for the IDPs and ensure they also learn skills while in the various camps.

5.4 Recommendations for Future Research

I believe that future research could expand to the UN SDG 3 which deals with well being and good health. During the investigation, it was discovered that the children suffered from malaria (60%) and suffered from pneumonia (18%) because they are exposed to the elements.

5.5 Final Conclusion and Reflections

We have looked to see if it is possible to adopt blockchain technology in the IDP camps in Nigeria. And according to the responses from the interviews, this is possible. They all agreed that if blockchain can help make their job easier they will be willing to use it. They agreed to take the necessary training to make the adoption easy.

6 References

Abeyratne, S. and Monfared, R. (2016) 'Blockchain Ready Manufacturing Supply Chain Using Distributed Ledger', *International Journal of Research in Engineering and Technology*, 05.

Adams, R., Kewell, B. and Parry, G. (2018) 'Blockchain for Good? Digital Ledger Technology and Sustainable Development Goals', in Leal Filho, W., Marans, R. W., and Callewaert, J. (eds) *Handbook of Sustainability and Social Science Research*. Cham: Springer International Publishing (World Sustainability Series), pp. 127–140. doi: 10.1007/978-3-319-67122-2_7.

Aisosa (2019) 'Effect/Impacts of Boko Haram in Nigeria', *Research Cyber*, 16 January. Available at: https://researchcyber.com/effect-impacts-boko-haram-nigeria/ (Accessed: 24 June 2020).

Alden, A. (2018) 'Connecting Refugees to Aid through Blockchain- Enabled ID Management: World Food Programme's Building Blocks', p. 10.

Alobo, E. and Obaji, S. (2016) 'Internal Displacement in Nigeria and the Case for Human Rights Protection of Displaced Persons', *Journal of Law, Policy and Globalization*, 51(0), p. 26. Available at: https://www.iiste.org/Journals/index.php/JLPG/article/view/32031 (Accessed: 24 June 2020).

Anwar (2018) '6 Key Blockchain Features You Need to Know about!', *101 Blockchains*, 25 May. Available at: https://101blockchains.com/introduction-to-blockchain-features/ (Accessed: 23 June 2020).

Bagri, M. (2018) 'Public Ledger: The Blockchain Technology', 5(8), p. 4.

Bonneau, J. *et al.* (2015) 'SoK: Research Perspectives and Challenges for Bitcoin and Cryptocurrencies', in *2015 IEEE Symposium on Security and Privacy*. *2015 IEEE Symposium on Security and Privacy (SP)*, San Jose, CA: IEEE, pp. 104–121. doi: 10.1109/SP.2015.14.

Christidis, K. and Devetsikiotis, M. (2016) 'Blockchains and Smart Contracts for the Internet of Things', *IEEE Access*, 4, pp. 2292–2303. doi: 10.1109/ACCESS.2016.2566339.

Daley (2019) *Five Blockchain Companies Improving the Food Industry*, *Built In*. Available at: https://builtin.com/blockchain/food-safety-supply-chain (Accessed: 24 June 2020).

Dorri, A. *et al.* (2017) 'Blockchain for IoT security and privacy: The case study of a smart home', in *2017 IEEE International Conference on Pervasive Computing and Communications Workshops (PerCom Workshops)*. *2017 IEEE International Conference on Pervasive Computing and Communications: Workshops (PerCom Workshops)*, Kona, HI: IEEE, pp. 618–623. doi: 10.1109/PERCOMW.2017.7917634.

Drescher, D. (2017) *Blockchain Basics*. Berkeley, CA: Apress. doi: 10.1007/978-1-4842-2604-9.

Eweka & Olusegun (2016) *Management of Internally Displaced Persons in Africa: Comparing*, *mafiadoc.com*. Available at: https://mafiadoc.com/management-of-internally-displaced-persons-in-africa-comparing_5c3f6e47097c471a1c8b45bb.html (Accessed: 13 June 2020).

Fridgen, G. *et al.* (2019) 'Supporting communication and cooperation in the asylum procedure with Blockchain technology - A proof of concept by the Federal Office for Migration and Refugees'.

Grimm, J. H., Hofstetter, J. S. and Sarkis, J. (2014) 'Critical factors for sub-supplier management: A sustainable food supply chains perspective', *International Journal of Production Economics*. Elsevier, 152, pp. 159–173.

Guggenmos, F. *et al.* (2018) 'Challenges and Opportunities of Blockchain-based Platformization of Digital Identities in the Public Sector (Research in Progress)', in.

Helander, E. (2008) *Children and violence: the world of the defenceless*. Basingstoke [England]; New York: Palgrave Macmillan.

'HNO Nigeria - 15March2015.pdf' (no date). Available at: https://www.unocha.org/sites/dms/ROWCA/Coordination/HNOs/HNO%20Nigeria%20-%2015March2015.pdf (Accessed: 1 September 2020).

Humphreys, P. K., Wong, Y. K. and Chan, F. T. S. (2003) 'Integrating environmental criteria into the supplier selection process', *Journal of Materials Processing Technology*, 138(1–3), pp. 349–356. doi: 10.1016/S0924-0136(03)00097-9.

Hyugen Hai yen (2020) *4 key features of Blockchain technology*. Available at: https://bytesoft.vn/en/4-key-features-of-blockchain-technology (Accessed: 23 June 2020).

Iansiti, M. and Lakhani, K. R. (2017) 'The Truth About Blockchain', *Harvard Business Review*, 1 January. Available at: https://hbr.org/2017/01/the-truth-about-blockchain (Accessed: 23 June 2020).

IDMC (2005) *Home*, *IDMC*. Available at: https://www.internal-displacement.org/home (Accessed: 24 June 2020).

IOM (2017) *World Migration Report 2018: - Chapter 2 - Migration and migrants: A global overview | IOM Online Bookstore*. Available at: https://publications.iom.int/books/world-migration-report-2018-chapter-2-migration-and-migrants-global-overview (Accessed: 11 June 2020).

Kalubanga, M. (2012a) 'SUSTAINABLE PROCUREMENT: Concept, and Practical Implications for the Procurement Process', *International Journal of Economics and Management Science*, 1, pp. 1–7.

Kalubanga, M. (2012b) 'SUSTAINABLE PROCUREMENT: Concept, and Practical Implications for the Procurement Process', *International Journal of Economics and Management Science*, 1, pp. 1–7.

Kamali, A. (2019) 'Blockchain's Potential to Combat Procurement', *CiiT International Journal of Biometrics and Bioinformatics*, 11, pp. 101–107.

Korpela, K., Hallikas, J. and Dahlberg, T. (2017) 'Digital Supply Chain Transformation toward Blockchain Integration', in. doi: 10.24251/HICSS.2017.506.

Laurence, T. (2017) *Blockchain for Dummies (Wiley 2017) | Tiana Laurence | download*. Available at: https://1lib.eu/book/2823924/8dfef6?regionChanged (Accessed: 19 June 2020).

Leblanc (2020) *How Blockchain Will Change Supply Chain Sustainability*, *The Balance Small Business*. Available at: https://www.thebalancesmb.com/blockchain-and-supply-chain-sustainability-4129740 (Accessed: 24 June 2020).

Makridakis, S. and Christodoulou, K. (2019) 'Blockchain: Current Challenges and Future Prospects/Applications', *Future Internet*, 11, p. 258. doi: 10.3390/fi11120258.

MSF (2016a) 'Médecins Sans Frontières', *Wikipedia*. Available at: https://en.wikipedia.org/w/index.php?title=M%C3%A9decins_Sans_Fronti%C3%A8res&oldid=974543603 (Accessed: 1 September 2020).

MSF (2016b) *Nigeria: Malnutrition is the biggest problem in Bama | MSF*, *Médecins Sans Frontières (MSF) International*. Available at: https://www.msf.org/nigeria-malnutrition-biggest-problem-bama (Accessed: 1 September 2020).

Nakamoto, S. (2009) 'Bitcoin: A Peer-to-Peer Electronic Cash System', *Cryptography Mailing list at https://metzdowd.com*.

Nnamani, A. (2017) *What are the problems in IDP camps in Nigeria?*, *Legit.ng - Nigeria news.* Available at: https://www.legit.ng/1120836-idp-camps-nigeria-problems.html (Accessed: 21 June 2020).

Nofer, M. *et al.* (2017) 'Blockchain', *Business & Information Systems Engineering*, 59. doi: 10.1007/s12599-017-0467-3.

OCHA, 2018 (no date) *West and Central Africa: Weekly Regional Humanitarian Snapshot (25 September - 1 October 2018) - Nigeria*, *ReliefWeb*. Available at: https://reliefweb.int/report/nigeria/west-and-central-africa-weekly-regional-humanitarian-snapshot-25-september-1-october (Accessed: 1 September 2020).

Olawale (2016) *Strategies for Rehabilitating IDPs in Nigeria*, *Nigerian Voice*. Available at: https://www.thenigerianvoice.com/news/208765/strategies-for-rehabilitating-idps-in-nigeria.html (Accessed: 24 June 2020).

Ølnes, S., Ubacht, J. and Janssen, M. (2017) 'Blockchain in government: Benefits and implications of distributed ledger technology for information sharing', *Gov. Inf. Q.* doi: 10.1016/j.giq.2017.09.007.

Presutti (2003) *William D. Presutti's research works | Duquesne University, PA and other places*, *ResearchGate*. Available at: https://www.researchgate.net/scientific-contributions/72779070_William_D_Presutti (Accessed: 24 June 2020).

Reiff, N. (2020) *Blockchain Explained*, *Investopedia*. Available at: https://www.investopedia.com/terms/b/blockchain.asp (Accessed: 23 June 2020).

Swan (2018) *Application of Blockchain Technologies for Global Operations | Emerald Publishing*. Available at: https://www.emeraldgrouppublishing.com/journal/jgoss/application-blockchain-technologies-global-operations (Accessed: 24 June 2020).

Symon (2000) *Curbing corruption in the public procurement process in ghana*, *Issuu*. Available at: https://issuu.com/alexanderdecker/docs/curbing_corruption_in_the_public_pr (Accessed: 24 June 2020).

Thompson, C. (2018) *How does the Blockchain Work? (Part 2)*, *Medium*. Available at: https://medium.com/blockchain-review/blockchain-essentials-for-dummies-ba2d8851f1ca (Accessed: 23 June 2020).

UNHCR, U. N. H. C. for (2018) *Figures at a Glance*, *UNHCR*. Available at: https://www.unhcr.org/figures-at-a-glance.html (Accessed: 11 June 2020).

UNICEF (2015) *Boko Haram violence displaces 1.4 million children in Nigeria and beyond – UNICEF*, *Africa Renewal*. Available at: https://www.un.org/africarenewal/news/boko-haram-violence-displaces-14-million-children-nigeria-and-beyond-%E2%80%93-unicef (Accessed: 1 September 2020).

Wendy, P and Walker, H (2006) *Walker, H. and Wendy, P. (2006); Sustainable procurement: emerging issues,; International Public Procurement Conference proceedings, 21-23 September, 2006*. Available at: http://www.ippa.org/IPPC2/PROCEEDINGS/Article_20_WalkerPhillips.pdf (Accessed: 20 June 2020).

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